

present invention;

Fig. 3 is a flow diagram illustrating the operation of the checkout apparatus; and

Fig. 4 is a perspective view of the checkout device.

Please insert the following paragraphs after paragraph 3 on page 7:

Turning now to Fig. 4, one embodiment of checkout device 30 is illustrated and includes vertical aperture 102 and horizontal aperture 100.

Vertical aperture 102 is located within substantially vertical surface 104 and is large enough to illuminate a normal size item.

Horizontal aperture 100 is located within top surface 108 of housing 110 and is large enough to illuminate a normal size item. In this embodiment, vertical aperture 102 is larger than horizontal aperture 100.

Preferably, checkout device 30 may be easily adapted to fit in a typical checkout counter 106. It is envisioned that top surface 108 be made substantially flush with the top surface 112 of counter 106.

IN THE CLAIMS

No claim changes.

1. (cancelled) An item processing device comprising:
a barcode reader; and
a radio frequency product label interrogator coupled to the barcode reader.
2. (cancelled) An item processing device comprising:

a barcode reader including a housing; and
a radio frequency product label interrogator in the housing.

3. (cancelled) The item processing device as recited in claim 2, further comprising:

a scale within the housing of the barcode reader.

4. (cancelled) An item checkout device comprising
a barcode reader including

control circuitry for obtaining first identification information from barcode labels; and
a communication port coupled to the control circuitry for obtaining second identification information from a radio frequency product label; and

a radio frequency interrogator which provides the second identification information to the communication port.

5. (cancelled) An item processing system comprising:

a barcode reader including a housing;

a radio frequency product label interrogator in the housing; and

a computer which obtains first identification information from the barcode reader and second identification information from the radio frequency product label interrogator.

6. (cancelled) An item processing system comprising:

a barcode reader having a housing and including

control circuitry for obtaining first identification information from barcode labels; and

a communication port coupled to the control circuitry for obtaining second identification information

from a radio frequency product label;

a radio frequency interrogator which provides the second identification information to the communication port; and

a computer which obtains the first and second identification information from the control circuitry.

7. (cancelled) An item processing method comprising the steps of:

activating an item processing device including a barcode reader to obtain first identification information from an item and a radio frequency product label interrogator to obtain second identification information from the item;

if the item has a barcode label, obtaining the first identification information by the barcode reader; and

if the item has a radio frequency product label, obtaining the second identification information by the radio frequency product label interrogator.

8. (cancelled) The method as recited in claim 7, further comprising the steps of:

sensing the item by the item processing device; and

activating the barcode reader and the radio frequency product label interrogator in response to sensing the item by the item processing device.

9. (cancelled) The method as recited in claim 7, further comprising the step of:

if the item has both the barcode label and the radio frequency product label, identifying the item using both the first and second identification information.

10. (cancelled) The method as recited in claim 9, further comprising the step of:

obtaining a price of the item if the first and second identification information are associated with the item.

11. (cancelled) The method as recited in claim 7, further comprising the step of:

obtaining a price of the item using the first identification information if only the first identification information is obtained.

12. (cancelled) The method as recited in claim 7, further comprising the step of:

obtaining a price of the item using the second identification information if only the first identification information is obtained.

13. (cancelled) An item checkout device comprising:

a housing suitable for mounting within a checkout counter

a barcode reader in the housing including

a laser for generating a laser beam;

an optical transceiver for passing the laser beam and for collecting light reflected from an item;

a mirrored polygon spinner for directing the laser beam from the optical transceiver and directing the light reflected from the item to the optical transceiver;

a plurality of pattern mirrors for creating a scan pattern from the laser beam received from the mirrored

polygon spinner and for collecting the light reflected from the item;

a photodetector for converting the light reflected from the item into electrical signals;

control circuitry for determining whether barcode label information exists in the electrical signals and, if so, for determining first identification information from the barcode label information; and

a communication port coupled to the control circuitry; and

a radio frequency interrogator in the housing and coupled to the communication port of the barcode reader for transmitting a wireless interrogation signal to determine whether the item is labeled with a radio frequency product label, and if so, for obtaining second identification information from the radio frequency product label;

wherein the control circuitry also generates output information including obtained identification information.

14. (cancelled) The item processing device as recited in claim 13, further comprising:

a scale within the housing for obtaining weight information for items sold by weight;

wherein the output information includes obtained weight information.

15. (cancelled) An item checkout device comprising:

- a housing suitable for mounting within a checkout counter
- a barcode reader in the housing including
 - a laser for generating a laser beam;
 - an optical transceiver for passing the laser beam and for collecting light reflected from an item;
 - a mirrored polygon spinner for directing the laser beam from the optical transceiver and directing the light reflected from the item to the optical transceiver;
 - a plurality of pattern mirrors for creating a scan pattern from the laser beam received from the mirrored polygon spinner and for collecting the light reflected from the item;
 - a photodetector for converting the light reflected from the item into electrical signals;
 - control circuitry for determining barcode label information in the electrical signals and for determining first identification information from the barcode label information; and
 - a communication port coupled to the control circuitry; and
 - a radio frequency interrogator in the housing and coupled to the communication port of the barcode reader for

transmitting a wireless interrogation signal, for receiving a response signal from a radio frequency product label on the item, and for obtaining second identification information from the response signal;

wherein the control circuitry also generates output information including the first and second identification information.

16. (cancelled) An item checkout device comprising:

a housing suitable for mounting within a checkout counter

a barcode reader in the housing including

a laser for generating a laser beam;

an optical transceiver for passing the laser beam and for collecting light reflected from an item;

a mirrored polygon spinner for directing the laser beam from the optical transceiver and directing the light reflected from the item to the optical transceiver;

a plurality of pattern mirrors for creating a scan pattern from the laser beam received from the mirrored polygon spinner and for collecting the light reflected from the item;

a photodetector for converting the light reflected from the item into electrical signals;

first control circuitry for determining whether

barcode label information exists in the electrical signals and, if so, for determining first identification information from the barcode label information; and

a communication port coupled to the first control circuitry; and

a radio frequency interrogator in the housing including

a label interrogator for transmitting a wireless interrogation signal to receive second identification information from a radio frequency product label, if one exists on the item; and

second control circuitry coupled to the communication port of the barcode reader for controlling the label interrogator and for sending the second identification information to the first control circuitry;

wherein the first control circuitry also generates output information including obtained first and obtained second identification information.

17. (cancelled) An item checkout system comprising:

an item checkout device including

a housing suitable for mounting within a checkout counter;

a laser in the housing for generating a laser beam;

an optical transceiver in the housing for passing

the laser beam and for collecting light reflected from an item;

a mirrored polygon spinner in the housing for directing the laser beam from the optical transceiver and directing the light reflected from the item to the optical transceiver;

a plurality of pattern mirrors in the housing for creating a scan pattern from the laser beam received from the mirrored polygon spinner and for collecting the light reflected from the item;

a photodetector in the housing for converting the light reflected from the item into electrical signals;

control circuitry in the housing for determining whether barcode label information exists in the electrical signals and, if so, for determining first identification information from the barcode label information; and

a communication port in the housing and coupled to the control circuitry;

a radio frequency interrogator in the housing and coupled to the communication port of the barcode reader for transmitting a wireless interrogation signal to determine whether the item is labeled with a radio frequency product label, and if so, for obtaining second identification information from the radio frequency product label;

wherein the control circuitry also generates

output information including obtained identification information; and

a computer for obtaining item price information using the obtained identification information and for completing payment for the item.

18. (cancelled) The item checkout system as recited in claim 17, wherein the item checkout device further comprises:

a scale within the housing for obtaining weight information for items sold by weight;

wherein the output information includes obtained weight information.

19. (previously submitted) An item checkout device comprising:

a housing suitable for mounting within a checkout counter including a substantially vertical surface containing a first aperture and a substantially horizontal surface containing a second aperture;

a barcode reader in the housing including

a laser for producing a laser beam;

a polygon spinner having mirrored facets for reflecting the laser beam in a plurality of directions to produce a plurality of scanning beams including a first

group of scanning beams and a second group of scanning beams;

a plurality of pattern mirrors, including a plurality of pairs of pattern mirrors, for reflecting the first group of scanning beams through the first aperture to produce a first scan pattern consisting of a plurality of intersecting scan lines, and for reflecting the second group of scanning beams through the second aperture to produce a second scan pattern consisting of a plurality of intersecting scan lines.

a photodetector for converting light reflected from an item into electrical signals;

control circuitry for determining whether barcode label information exists in the electrical signals and, if so, for determining first identification information from the barcode label information; and

a serial communication port coupled to the control circuitry for providing an alternative peripheral connection to a terminal peripheral connection; and

a radio frequency interrogator in the housing and coupled to the communication port of the barcode reader for transmitting a wireless interrogation signal to determine whether the item is labeled with a radio frequency product label, and if so, for obtaining second identification information from the radio frequency product label;

wherein the control circuitry also generates output information including single identification information from the first and second identification information.

20. (previously submitted) The item processing device as recited in claim 19, further comprising:

a scale within the housing for obtaining weight information for items sold by weight;

wherein the output information includes obtained weight information.

21. (previously submitted) An item checkout device comprising:

a multi-aperture barcode reader including

a housing suitable for mounting within a checkout counter including a substantially vertical surface containing a first aperture and a substantially horizontal surface containing a second aperture;

a laser in the housing for generating a laser beam;

a polygon spinner in the housing having mirrored facets for reflecting the laser beam in a plurality of directions to produce a plurality of scanning beams including a first group of scanning beams and a second group of scanning beams;

a plurality of pattern mirrors in the housing, including a plurality of pairs of pattern mirrors, for reflecting the first group of scanning beams through the first aperture to produce a first scan pattern consisting of a plurality of intersecting scan lines, and for reflecting the second group of scanning beams through the second aperture to produce a second scan pattern consisting of a plurality of intersecting scan lines.

a photodetector in the housing for converting light reflected from an item into electrical signals;

first control circuitry in the housing for determining whether barcode label information exists in the electrical signals and, if so, for determining first identification information from the barcode label information; and

a serial communication port coupled to the first control circuitry for providing an alternative peripheral connection to a terminal peripheral connection; and

a radio frequency interrogator in the housing of the multi-aperture barcode reader including

a label interrogator for transmitting a wireless interrogation signal to receive second identification information from a radio frequency product label, if one exists on the item; and

second control circuitry coupled to the

communication port of the barcode reader for controlling the label interrogator and for sending the second identification information to the first control circuitry;

wherein the first control circuitry also generates output information including single identification information from the first and second identification information.

22. (previously submitted) An item checkout system comprising:

a computer; and

an item checkout device including

a multi-aperture barcode reader including

a housing suitable for mounting within a checkout counter including a substantially vertical surface containing a first aperture and a substantially horizontal surface containing a second aperture;

a laser in the housing for generating a laser beam;

a polygon spinner in the housing having mirrored facets for reflecting the laser beam in a plurality of directions to produce a plurality of scanning beams including a first group of scanning beams and a second group of scanning beams;

a plurality of pattern mirrors in the

housing, including a plurality of pairs of pattern mirrors, for reflecting the first group of scanning beams through the first aperture to produce a first scan pattern consisting of a plurality of intersecting scan lines, and for reflecting the second group of scanning beams through the second aperture to produce a second scan pattern consisting of a plurality of intersecting scan lines.

a photodetector in the housing for converting light reflected from an item into electrical signals;

first control circuitry in the housing for determining whether barcode label information exists in the electrical signals and, if so, for determining first identification information from the barcode label information; and

a serial communication port coupled to the first control circuitry for providing an alternative peripheral connection to a computer peripheral connection; and

a radio frequency interrogator in the housing of the multi-aperture barcode reader including

a label interrogator for transmitting a wireless interrogation signal to receive second identification information from a radio frequency product label, if one exists on the item; and

second control circuitry coupled to the

communication port of the barcode reader for controlling the label interrogator and for sending the second identification information to the first control circuitry;

wherein the first control circuitry also generates output information including single identification information from the first and second identification information; and

wherein the computer obtains item price information using the single identification information and completes payment for the item.

23. (previously submitted) The item checkout system as recited in claim 22, wherein the item checkout device further comprises:

a scale within the housing of the multi-aperture barcode reader for obtaining weight information for items sold by weight;

wherein the output information includes obtained weight information.